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ABSTRACT

The results of fieldwork in six diagnostic/prescriptive reading projects in school districts within and around Santa Monica, California, are summarized in this paper. The fieldwork was designed to examine the process of implementing diagnostic/prescriptive approach reading projects and was done as part of a large Rand study of innovative projects in four federal programs: Title III of the Elementary and Secondary Education Act; Title VII (the Bilingual Program) of the same Act; the Vocational Education Act, Part D; and the Right to Read Program. Fieldwork data were collected through semistructured interviews with superintendents, project directors, principals, teachers, and others with a knowledge of the project, such as district office personnel or parents. The adaptation and implementation problems observed in the six reading projects strongly suggest that the diagnostic/prescriptive approach to organizing reading instruction imposes behavioral change demands on teachers that require substantial extra resources to implement and, even more important, to continue. (LL)

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John G. Wirt

April 1975

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IMPLEMENTING DIAGNOSTIC/PRESCRIPTIVE READING INNOVATIONS*

John G. Wirt

INTRODUCTION

Some educators are currently advancing the diagnostic/prescriptive approach to reading instruction as an effective way of increasing reading achievement in schools across the country. Although there have been some studies of the effects on students' reading achievement and teachers' behavior in implementing the diagnostic/prescriptive approach, there have been far fewer analyses of the processes of implementing this innovation in school districts. This paper summarizes the results of fieldwork in six diagnostic/prescriptive reading projects in local school districts. The fieldwork was designed to examine the implementation process. A more detailed analysis and description of the implementation of these six projects is available in a Rand study.[1]

The fieldwork was done as part of a large Rand study of innovative projects in four federal programs: Title III of the Elementary and Secondary Education Act; Title VII (the Bilingual Program) of that same Act; the Vocational Education Act, Part D; and the Right-to-Read Program.[2] Fieldwork data were collected through semi-structured interviews with superintendents, project directors, principals, teachers, and others with a knowledge of the project, such as district office personnel or parents.

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*A paper prepared for a symposium on "The Field Study of Programs for Educational Change," American Educational Research Association, March 31, 1975, Washington, D.C.

[1] John Wirt, et al., *Federal Programs Supporting Change in Education*, Appendix B, "Innovations in Reading," The Rand Corporation, R-1589/3-HEW, April 1975.

[2] For a summary of the entire study and a listing of reports available, see: Paul Berman and Milbrey McLaughlin, *Federal Programs Supporting Change in Education: The Findings in Review*, The Rand Corporation, R-1589/4-HEW, May 1975.

Up to a week was spent in each project by two Rand staff members conducting these interviews.[1]

PROJECT CHARACTERISTICS

The six fieldwork projects were selected from among the sample of 293 included in the entire Rand study. The criteria for choosing them were that they should have involved the implementation of:

(1) A hierarchical sequence of well-defined *basic reading skills* as a guide for teachers in planning classroom reading activities;
(2) *Diagnostic testing* of student achievement with respect to these basic reading skills;
(3) *Individualization* of reading activities in the classroom to provide each student with learning experiences designed to strengthen performance in skill areas of weakness detected through testing; and
(4) Several other changes in conjunction with diagnostic/prescriptive reading--i.e., a *total approach* to reading improvement.

The first three of these criteria comprise the elements of a diagnostic/prescriptive approach to reading.

The diagnostic/prescriptive approach to reading is an organizational, as distinct from an instructional, innovation in reading because the approach specifies only how teachers should organize their classroom activities for reading and leaves them theoretically free to use whatever instructional techniques (e.g., phonics or language experience) and reading materials they prefer and have available. The organizational implications of the diagnostic/prescriptive approach are that teachers must: (1) diagnose students' reading needs on an individual basis, (2) assign students to separate groups organized according to skill

[1]For further discussion of the fieldwork methodology, see Milbrey McLaughlin, et al., *Federal Programs Supporting Change in Education: The Process of Change*, The Rand Corporation, R-1589/2-HEW, April 1975.

areas of reading need, (3) select appropriate instructional activities for each of these groups, and (4) reform these groups as the children progress in their reading abilities. The diagnostic/prescriptive approach allows grouping within a single classroom or, at a higher level of complexity, among several classrooms at any one grade level, or across several grade levels, with all teachers involved cooperating by specializing in the teaching of certain reading skills.

The diagnostic/prescriptive approach contrasts greatly with the traditional approach to the teaching of reading where students proceed lock-step through an instructional program decided upon by the teacher, perhaps early in the school year, with little or no periodic testing, and little adjustment of the curriculum to meet individual needs. Most teachers adjust their reading curriculum to individual students to some extent by giving some students extra help and by testing through interpreting informal cues; but with the diagnostic/prescriptive approach, instructional activities should be much more highly differentiated among students and much more frequently modified during the course of instruction.

For the purposes of our fieldwork, a *total approach* to reading improvement--the fourth selection criterion--was defined to be that the project:

(1) Was aimed at changing the behavior of the *regular classroom teachers* in the project schools;
(2) Included *other components* such as the introduction of learning centers into classrooms, reading resource centers, peer tutoring, or parent involvement; and
(3) Involved *all the students* in the project schools, or at least all the students in several grades.

In practical terms, these criteria eliminated reading projects that were strictly tutorial or remedial in intent or did not have a sizable in-service component. Perhaps the key feature of the projects that were selected was that they were going directly to the classroom teachers instead of bypassing them by setting up auxiliary instructional components.

To give a better idea of what a "total approach" to reading improvement can involve, the most complex (and the most successful) of the reading projects included:

- o Removal of individual desks from classrooms and replacement with tables.
- o Media and learning centers in classrooms.
- o Use of gymnasiums, spare rooms, and other areas for specific learning activities.
- o Multiple and well-defined instructional components, two related to reading and others related to reading readiness.
- o A grouping strategy where students moved from room to room throughout the parts of the school day devoted to reading and reading-readiness activities.
- o A wealth of instructional materials (over 20 different programs) matched to each component and selected for specific purposes.
- o Instructional materials stored in the classroom and catalogued for use.
- o A separate reading center for intensive student drill in reading skills and staffed by a reading specialist and an aide.
- o Required participation of all teachers at each grade level included in the project, plus a specialist teacher to handle some of the learning tasks.
- o Classroom aides trained in the instructional materials used and assigned to specific teaching tasks.
- o In-service training for teachers in the instructional materials used in class.
- o A resource person in each school readily accessible to teachers for help and advice.
- o An evaluation system to check on process implementation by teachers.
- o Diagnostic testing performed by specialist teachers.
- o Regular meetings with teachers to discuss problems.
- o A specific, high-quality, and yet simple project evaluation design.

Although some projects were considerably simpler, almost as long a list could be given for some of the other projects chosen. The rationale for the total approach to reading improvement is that in the past single changes in reading programs seldom led to dramatic improvement in reading achievement, and therefore such improvement is likely to come only if a coordinated series of changes is attempted.

Commercial Reading Systems

As the backbone of their diagnostic/prescriptive project, four of the projects incorporated a commercial reading system, but the rest relied on informal methods or developed their own reading system. A reading system provides at a minimum the sequence of reading skills to be taught, diagnostic tests, a mechanism for keeping records of student progress, and an index to commercially available reading materials specifying alternative instructional means for teaching each reading skill defined.

Number of Schools and Grade Levels

The six reading projects in the fieldwork sample differed significantly in the degree of change attempted. One variable has already been mentioned: the complexity of a project measured by the number of changes made in conjunction with diagnosis and prescription. Another variable was the number of schools included in the project. Two projects attempted implementation in an entire school district. One of these districts consisted of over 100 schools and the other of nine schools. A third project attempted implementation in a large number of schools in seven school districts. Three other projects attempted implementation in four schools or less within one district. One last variable was the number of grade levels initially included in the project. One included only primary grades, three included only primary and intermediate grades, and two included kindergarten through twelfth grade.

ADAPTATIONS

One of the central premises of the Rand Change Agent Study was that the implementation of an innovation is best described as a process of mutual adaptation, where the components of the innovation are changed in response to the institutional realities of the schools (or school

district) in which it is being implemented, and at the same time the institutional characteristics of the schools (or school district) are affected by the project. This mutual adaptation is useful for describing what happens when school districts attempt to implement the diagnostic/prescriptive approach and the difficulties that arise.

Reading Teachers

In four out of the five reading projects that made a serious attempt to implement a diagnostic/prescriptive approach,[1] a decision was made to hire a full-time reading specialist teacher (or other specialist teachers) for each school involved in the project to aid in implementation.[2] Implementation of the diagnostic/prescriptive approach thus appeared to have induced further organizational change in the structure of schools in the form of the addition of a specialist reading teacher. This adaptation was particularly significant because four of the six projects examined were in the Right-to-Read program, where there is an emphasis on projects using existing resources as much as possible.

The roles of these reading teachers varied significantly among the projects and among the schools within projects. In some schools the reading teachers were the decisionmakers regarding project activities in their schools; in most schools they organized any formal in-service training sessions; in some schools they assisted with diagnostic testing and assigning students to groups; in others they managed the reading resource center. In most instances, the reading teachers performed more than one of these functions.

One other important function of the reading teachers was to serve as change agents in their assigned schools. In this role, the reading teachers worked informally with the teachers on a one-to-one basis to interest them in adopting the diagnostic/prescriptive approach and in finding solutions to their individual problems during implementation. The formal in-service training and the tangible elements of the projects appeared to have served a far less significant role in changing the behavior of teachers (except in one project where the teachers were forced

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[1] When Rand arrived on site, one of the six reading projects turned out not to be mainly involved with implementing a diagnostic/prescriptive approach as indicated in the project proposal.

[2] In the fifth project no reading teachers were hired, and little change was implemented in the project schools.

into conforming to its formal structure). After presentation of the formal elements of a project, the reading teachers typically started in to achieve change by finding one or two teachers who were receptive to change and working with them to implement diagnosis and prescription in their classrooms. As success was achieved, the reading teachers shifted their efforts to other teachers and gradually worked through the school. Sometimes the reading teachers approached teachers with the idea that they team with another teacher who had already made the change to the diagnostic/prescriptive approach. The more successful reading teachers spent considerable time "mapping" out the social structure of the school by listening in the lunchroom, getting to know the teachers on a personal basis, and finding out who was interested in changing. Reading teachers who apparently had been successful in functioning as change agents felt that it took them about two years to change all of the teachers who could be changed. In summary, implementation of the diagnostic/prescriptive approach appeared to occur through a process of infiltration by the project reading teachers into the social structure of the school rather than through formal training activities.

Although performance of the change agent role was critical to changing the behavior of teachers, many reading teachers apparently had difficulty functioning in this way and were a barrier to implementation of diagnosis and prescription or dropped out of their project. Most of the project reading teachers had formerly been classroom or remedial reading teachers and had not had previous experience in working with teachers. It was difficult for many of these teachers to make the transition to a resource mode--that is, working with teachers instead of with children. For the most part, the projects did not provide any training in how to function as a reading resource teacher, and it was a matter of sink or swim concerning this aspect of their responsibilities. Some projects did provide training for the reading teachers in methods of teaching reading to children and in techniques for diagnosis and prescription, but no project provided any training assistance in how to work with and change other teachers. For example, in one project only six of the thirteen reading teachers who started were able to make the transition to the reading resource mode, and two of these had previous experience as resource teachers in other subject areas.

Diagnostic Testing

The demands of the diagnostic/prescriptive approach for frequent in-class testing and for record keeping were the elements of the approach that generated the most teacher resistance. "Test, test, test is all we do," was a typical reaction, "It takes valuable time away from teaching." Clearly the test, teach, test style of teaching with detailed record keeping to keep track of student progress is not the way most teachers manage their classrooms now, and they did not readily see which other activities should be displaced for this testing and record keeping.

Testing and record keeping were implemented to a great extent in a project only if performed as an auxiliary service by the project reading or specialist teachers, or by a computerized service provided by the central office. In all the projects, these services were added to the project after it had begun when it became apparent that without them the tests would not be given and the records would not be kept by the teachers. Providing the teachers with relief from testing and record keeping was the second kind of organizational adaptation to the reading project observed; the indications were that the school districts in which these projects were located planned to continue these services beyond the period of federal support to maintain teacher behavior.

Reading System Adaptations

Another notable kind of adaptation was in the projects (or schools within a project) that attempted to implement a commercial reading system. In all but one case, the schools significantly modified the reading system according to their own perceptions of need. The situation was clearest in the schools that attempted to implement the Wisconsin Design for Reading Skill Development.[1] Only one school in all the projects elected to implement the whole Wisconsin Design available at the time,[2] and even in that case implementation was far from uniform across classrooms. Instead, schools chose to implement one component or another (the Word

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[1]"Wisconsin Design" is a shorthand term for the Wisconsin Design for Reading Skill Development, a reading system developed by the Wisconsin Research and Development Center for Cognitive Learning.

[2]The Comprehension component of the Wisconsin Design was not available at the time of our visits to the projects.

Attack component, for example, or the Study Skills component); and, in most cases, they implemented only parts of these components. The reasons for selecting one component and not others were hard to trace: generally the teachers thought their students needed some skills but not others. Sometimes the reason was also that the teachers did not like the teaching approach implicit in a component--for example, the Word Attack component of the Wisconsin Design, which requires teachers to spend considerable time on decoding skills.

Grade-Level Problems

The reading projects had difficulty adapting to the peculiar characteristics of reading instruction at different grade levels. The two projects that included the high school level failed to have an effect at that level (in one of these projects, the one high school included was dropped in the first year; in the other, only tutorial components partly survived); in the three projects that attempted implementation at the intermediate and primary levels, success was usually greater at the primary levels. The general reason why the projects had more difficulty at the higher grade levels was the incompatibility of the diagnostic/prescriptive approach with the organization of the schools at those levels. In the high schools, it was not clear which teachers should implement diagnosis and prescription in their classrooms. Usually it was the English teachers, but they frequently did not consider reading improvement to be their responsibility, had classes in which most of the students did not need reading instruction, did not have access to a wealth of instructional materials coded for reading skills and suitable for high school students, and were usually far less knowledgeable about methods of teaching reading than primary level teachers, one of whose main responsibilities is the teaching of reading. The projects had trouble at the intermediate grade levels for similar reasons, though not to the same degree as at the high school level. Another factor was that high school and intermediate level teachers thought that reading was a job for primary level teachers, notwithstanding exhortations by the projects that reading could and should be taught in all subject matter areas.

Teaching reading at the intermediate and high school levels requires different instructional materials, perhaps different definitions of

reading skills, different diagnostic ... ts, and different grouping strategies than at the primary levels. The projects did not generally have the resources to meet these realities. The adaptation was generally to drop the higher grade levels from the projects.

Effects of Planning

Although the sample of only six projects is not large enough to draw a firm conclusion, there appeared to be a significant difference between the four Right-to-Read funded projects and the two Title III funded projects in the number and extent of other kinds of adaptations. In one Title III project, the director resigned at the end of the second year over a difference in educational philosophy with the superintendent, staffing problems, and difficulties in working with the schools. After the project director left, a substantial shift was mandated by the superintendent from an informal approach to diagnosis and prescription to implementing the Wisconsin Design reading system. The shift in project activities was so drastic as to produce almost an entirely new project, except that most of the staff of reading teachers was continued. In the other Title III project, the original main object of providing reading specialist teachers and resources to the participating schools to assist them in implementing the diagnostic/prescriptive approach was dropped, and effort was shifted to providing tutorial services in the schools and after-hours workshops for volunteer teachers.[1] The four Right-to-Read projects underwent far less severe shifts in the nature of their activities.

The reason why the Right-to-Read projects underwent less severe adaptations appears related to the planning process and organizational structure that Right-to-Read projects were expected to follow. Right-to-Read issued guidelines that *each school* in a project, through the mechanism of a Unit Task Force broadly representative of all school staff, should select its own version of a diagnostic/prescriptive approach to reading. Right-to-Read also provided a so-called "eleven-step planning process kit" to aid the Unit Task Forces in making their selections. The kit included a detailed need assessment procedure.

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[1]This project's grant will last for two more years, which may provide enough time to reach their original objective.

Although each Right-to-Read project followed the guidelines differently (two of the four Right-to-Read projects, for example, did not allow schools to make independent choices of their reading programs), the flexibility provided by school-based decisionmaking, the participation of staff from the schools in decisionmaking, and the overview of project objectives obtained through participation in conducting the needs assessment and filling out the steps in the planning process appeared to overcome some of the problems that appeared in the Title III projects.

In commenting on the Right-to-Read needs assessment procedure and planning process, one respondent said, "It sets the stage. With needs assessment (and planning procedure), you don't feel as if you're thrown into it" [the diagnostic/prescriptive approach]. We interpreted this comment to mean that the needs assessment and planning procedure served the purpose of introducing project staff to the kinds of changes involved in implementing a diagnostic/prescriptive approach to reading and guiding them into initial implementation. The steps in the Right-to-Read needs assessment and planning process are analogous to the procedures of performing diagnosis and prescription in the classroom: First, students' skill needs are assessed, then instructional materials are selected, and so forth.

Contrary to what might be expected, the information that surfaced through the needs assessment and planning processes seldom produced any surprises that led planning group members to select alternatives that departed substantially from trends already underway in the district or in the school or were not in line with their previous experiences. For example, if a parent on the planning team had been involved in organizing tutoring programs, then the reading project had a tutoring program; or if planning group members were interested in diagnostic testing, then major effort was devoted to developing diagnostic tests.

In summary, the Right-to-Read planning processes seemed to serve more for the purposes of giving the participants an overview of the change that they were going to attempt and involving them in the process of change than as a means of developing information that affected decisions.

IMPLEMENTED CHANGE

One project and one school in another project achieved full implementation and were dramatically successful in improving student scores on diagnostic tests (the project was the one whose components were listed in describing what is meant by a total approach). Otherwise, the overall pattern in the reading projects was piecemeal implementation of change with none of these less successful projects accomplishing substantially more than the others.

Effects on Teachers

The effects on teachers in the highly successful project and the one successful school in another project were substantial but hard to summarize succinctly because different teachers were affected differently. Obvious behavior changes were that the teachers in these successful instances conformed to the scheduling demands for grouping their students and sending them to other classrooms. Less obvious but probably more significant kinds of changes were indicated by one teacher who said, "As a result of this project, I now see differences in my kids that I did not see before and how to teach to those differences." She was referring to the different reading skill needs that her students could have and how she could individualize instructional activities in her classroom to meet these needs. She indicated that previously she had grouped students in her classroom as to whether they were slow, average, or fast readers based largely on the results of standardized achievement tests. Now she saw that "slow" and "fast" readers might have the same skill deficiencies and needs for learning, and what she could do about it.

Few teachers in any project appeared to have changed their whole approach to teaching, as might be expected to happen in a project concerned with changing the whole structure of a school (such as by the establishment of open classrooms). Most of the teachers interviewed were asked the open-ended question of how the project had affected their teaching in other subject areas, and few replied that a major change had occurred.

Many teachers interviewed in the less successful projects were strongly opposed to their diagnostic/prescriptive project on the grounds that it required too much emphasis on decoding skills when they thought that broader reading goals were more important, such as reading motivation,

being able to get the main idea from a paragraph, and thinking critically. "Word attack, word attack, that's all we teach," one project teacher said, "and that's not enough." The generic problem in these instances was that the structure and emphasis of the skills hierarchies used in the reading projects were not compatible with the instructional approaches to reading that some of the teachers had been trained in and had used for years. These were cases where the professionalism of teachers, which is perhaps greater in the area of reading than in other subject matter areas, was a barrier to implementation.

Diagnosis Without Prescription

Two of the projects failed to provide teachers with access to libraries of skill-referenced reading materials, and, as a consequence, few of these teachers appeared to have made much progress toward establishing skill-oriented instruction in their reading groups. Without access to a library of skill-referenced materials, either in the classroom or in a resource center in the school, these teachers faced the problem of locating enough skill-referenced materials to keep their reading groups going. They apparently had not been willing or did not have the expertise to assemble their own libraries of materials.

Total Approach Implementation

Except in the one project where implementation was complete, the idea of a total approach to diagnostic/prescriptive reading improvement suffered the same fate as the reading system: Most schools adopted only a few parts of a project's total approach, usually different parts, while other schools implemented almost no changes. Typically, the most successfully implemented component was learning centers, which would often be adopted by teachers even though they made no other changes in their classroom organization or teaching methods. Another common outcome was that parent involvement usually failed when it was tried, but there were instances of both success and failure in implementing most other components of a total approach, such as reading resource centers and peer tutoring.

In summary, although the total approach may be fine in theory, it is difficult to implement in practice because the tendency is for piecemeal implementation of the components.

Number of Schools Involved

There was a high negative correlation between the amount of change implemented by a project and the number of schools that were involved,[1] as might be expected in projects as complex as those examined. A project with only two schools involved was the most successful; the two projects with large numbers of schools involved had little significant classroom change. The other projects were in the middle on both counts.

CONTINUATION

The prognosis for continuation of the six reading projects is as follows. One has two years to go on its grant, three will probably collapse if federal funds are withdrawn, and two will undoubtedly continue.

In both of the projects that will be continued the superintendents strongly support continued implementation and certainly represent the decisive factor in continuation. Although neither project has shown significant gains in reading achievement scores, the superintendents value their projects as a way of defining a reading curriculum for their districts and in providing a means of transferring information about students' reading abilities along with them when they move from school to school.

The most successful diagnostic/prescriptive reading project is one of the three that will not be continued next year unless they obtain additional federal funds. The reasons for discontinuance are complex and difficult to sort out as to their relative importance. One is that although the children in the project have shown dramatic gains in reading readiness and word-attack skills, they have not shown gains on reading achievement test scores; and district officials cite this as a reason why they will not support the project for widespread adoption within the district. Another factor is race: The director is white and the district is highly politicized over the black/white issue. Another is the personality of the project director, who is strong-willed, forceful, and not bashful about confronting teachers--qualities that go a long way toward explaining why the project has been so successful but that have also antagonized many people in the district.

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[1] All of the projects were funded at a level of roughly $100,000 per year.

Because this project was so successful in achieving change, there is a question of what parts of it are the most critical to achieving change and continuing teacher behavior. The project is operating in four other schools without federal funds (where implementation was initially achieved with a Title III grant) and remains largely implemented in three of them. The principals in these schools support the project but have found that the process evaluation system for monitoring teacher behavior that is part of the project has had to be continued in order to maintain implementation. The principal in the fourth school is not enthusiastic about the project and has discontinued the process evaluation system. The project director says that the teachers in this school are gradually slipping back to their old behaviors and dropping elements of the project one by one.

CONCLUSIONS

The adaptations and implementation problems observed in the six reading projects strongly suggest that the diagnostic/prescriptive approach to organizing reading instruction imposes behavioral change demands on teachers that require substantial extra resources to implement and, even more important, to continue. Ideally, implementation of the diagnostic/prescriptive approach would require extra resources only during initial implementation--for example, to provide for in-service training--but as teachers learn the procedures involved, become secure in grouping students for reading instruction, and readjust their time allocations to provide the necessary time for testing and record keeping, the amount of extra resources required would diminish. However, school districts often found it necessary to hire reading teachers and to provide auxiliary support to handle testing and record keeping, and process implementation checks were required in the most successful project to maintain teacher behavior. Therefore, the organizational change implicit in diagnosis and prescription probably requires behavioral changes that teachers cannot or will not easily assimilate as routine behavior. Granted, the sample of projects in the fieldwork was small, which makes generalization precarious, but the evidence strongly suggests that diagnosis and prescription requires permanent extra work that teachers will not often perform and that therefore must be performed through auxiliary means. If so, it needs to be

shown that diagnosis and prescription of the kind represented by the projects described above lead to improvements in educational outcomes that are worthwhile as an innovation to be widely recommended to schools. For extra work and expense, there should also be extra benefits.